NEWSLETTER No. 23

REMOTE IMAGING GROUP

DECEMBER 1990

REMOTE IMAGING GROUP (R. I. G.)
NEWSLETTER No. 23 DEC 1990

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Published by The Remote Imaging Group (RIG).
Printed by Isle Print Services, Wisbech.

NEWSLETTER No. 23 Dec 1990

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EDITORIAL & SECRETARIES PAGE

Well I trust that members who are reading this have just finished dusting themselves off having fallen over at the shock of receiving a RIG newsletter within weeks of the cover month! As you would expect the size is a little smaller than usual but I hope the quality is good. The cupboard is now bare as far as articles are concerned and the next issue will be even thinner if we cannot successfully encourage further contributions from our members. Please do your best.

Its subscription time again. The subs as Henry will explain in his column are to rise to £8. Judging by the comments I receive at the rallies and over the phone thats still seems to be good value.
Postage for our overseas members will rise too. Henry is looking for envelopes that have open ends, basically bits of brown paper! This will allow us to send our overseas members the newsletter at "Printed Papers" rate which still goes at Air Mail speed. Please send your subs to Des in January as usual. We normally loose about 20% of our members at this time, some drift back during the year, and with new members wanting to start remote imaging, we seem to have reached a steady state membership figure of approx. 1050.

The membership survey is still proving useful and I ask members when renewing to quickly fill it in. The results help us to determine what articles and products our membership is looking for. We have also added some explanation of some of the abbreviation used as some of our newer members are having a few problems. Perhaps this will grow into a full dictionary of terms.

FAX is becoming popular these days and I have arranged to receive FAX's on 0525 378294 so feel free to use this number for FAX transmissions only. The number is not on my premises!

Next years rallies will include: Piccotts Lock (Lea Valley, N. London) on 9 & 10 March, and the VHF Convention (Sandown Park Racecourse) on 24 March where we will hold our AGM as usual.

Well it only remains for me to wish you all the best for Christmas and the New Year and hope to 'see' you in the new year,
Best Wishes

Phil
RIG Secretary & Editor

Chairman's Waffle

A new sort of LED may be just around the corner. At present they only produce yellow / green light but it is thought that they might be fine tuned to produce other wavelengths. This new type of device is not manufactured from the usual gallium arsenide type of material, but from an organic polymer called PPV or poly(p-phenylene vinylene). You can never tell, but it might eventually produce the compact blue light source that I and many others have been waiting for.

One letter that I received from Norway wondered why I was looking for them in the first place? The answer to that is quite simple. Normal photographic printing paper is only affected by light at the blue end of the spectrum. You use red light as a safe light to handle this type of paper. Paper sensitive to other wavelengths is available, but not readily, is more expensive and is more difficult to handle in a completely dark darkroom. If a large piece of paper is wrapped around a drum which is rotating accurately at 60, 120 or 240 rpm and is synchronised to an APT signal, the only extra components required to produce superb examples of APT pictures are a traverse / lens system and a source of light to expose the paper. Most of these can be arranged with the exception of the light source. What is required? The source needs to be modulated by the incoming signal, which has components of up to say 4 KHz. You cannot do that with an ordinary filament bulb on its own. Yes they are bright enough especially the quartz iodine types, but you cannot turn them on and off at the speeds required unless some sort of optical shutter or Kerr cell is used. Various systems have been tried but not to any major success. The super high intensity red LED's are just what we need but are of the wrong wavelength. Hence the quest for the blue LED or Laser.

The wish to try and get the December Newsletter out in December has resulted in Henry having to complete this Waffle before the last Newsletter has been completed by the printers. What's more I've got a stinking rotten cold to hinder my inspiration, just what I needed! So if you want one just get closer to the print and it's free! That's my excuse in case there is any change in the style.

In RIG 19 I put a wanted notice in the waffle asking for a camera body. Mr Parrish from near Boston came to my rescue with a surplus one. It was just what I needed and its addition to my equipment has been very useful. My belated thanks very much indeed to Mr Parrish.

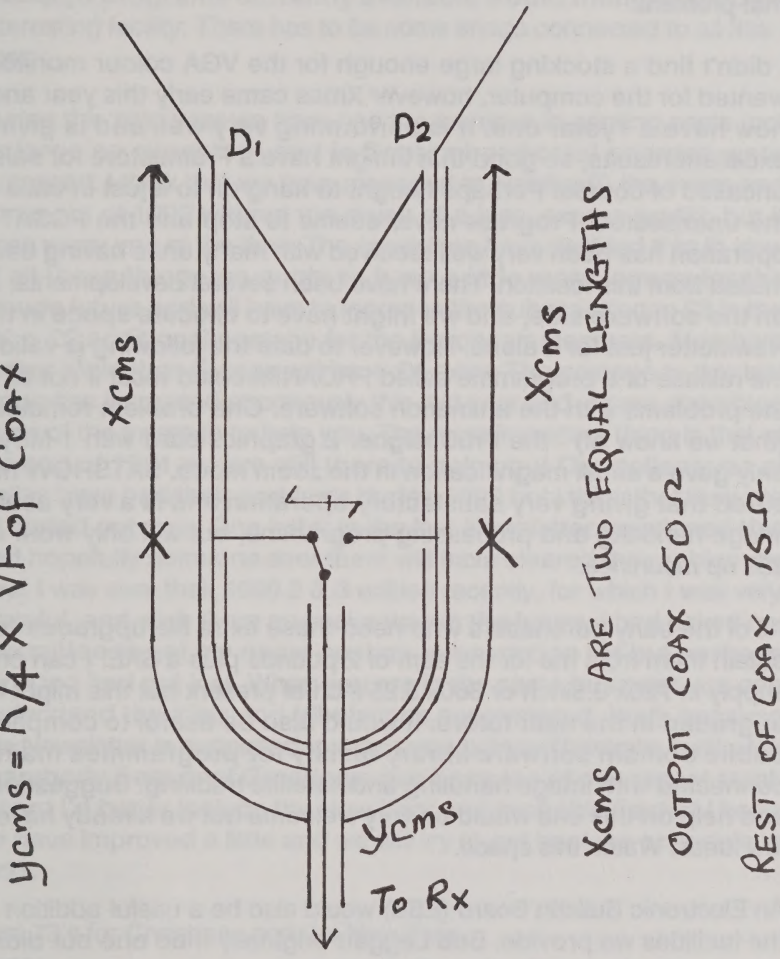
After announcing the arrival of Elizabeth Anne to the Sansoni household we have another announcement to advise you of - the arrival of quads to the Seaford household. Relax there aren't any nappies, just 4 black Griffon Bruxelloise (Ed's comment - now ready for sale!!) puppies that are extremely small and no doubt are getting everywhere now. Phil was male Midwife and didn't know what to do. Needless to say mother managed quite well on her own, much to Phil's relief!

Talking of dogs reminds me of Max who started out about 15lbs weight when he arrived with us. He is now 68lbs and still gaining. They tell us he should attain about 80lbs at maturity. He is quite docile and might come to some of the rallies this next year. The farm cat has found out where overdrive is when Max is only 5 yards behind!

A few weeks ago an alarm was triggered down at the farm at night. Both Max and myself went to investigate. My wife approached the site from a different direction at the same time. I left the car with Max to see what had caused the alarm to go off. It was only when I reached the far end of the buildings that I discovered that mans best friend was not giving me back-up and had retired to where my wife was. He didn't get a gallantry award for that type of action!

Feng Yen-1b is not using the normal type of polarisation rotation. With normal aerials this produces deep nulls in the signal. Exactly the same as when you have inadvertently wrongly connected an aerial for the normal Polar orbiters. If you get better pictures from this satellite on 137.80 MHz than those from NOAA 9,10,11 etc then your aerial phasing is probably wrong. In some cases it might be possible to overcome this problem by the use of a coaxial changeover relay positioned in the right place. In many systems of crossed dipoles and crossed reflectors the matching harness consists of two unequal lengths of coax. The difference between these two should be 1/4 wavelength (reduced by the velocity factor of the cable). If the arrangement could be changed as per the diagram and a coaxial changeover relay used, the polarisation could then be switched from the operating position. Let the length of the shorter leg be X cms.

The other leg should be X cms + 1/4 wavelength x Velocity Factor of cable. The outer braids of the coax can all be common'ed and switching arranged to include the extra length in either leg which ever way the relay is switched.



The connections to these points should be as short as possible to avoid mismatches. I hope that the diagram makes the system more understandable. The type of coaxial changeover relay I would use would be the old type of Magic (sorry Magnetic) devices that were originally used in PYE Cambridges and similar types of equipment: 12v coil and a primitive type of see-saw action.

It is essential that the unused connection is not shorted out but open circuit. The downlead goes to the pivot connection. The only minor problem with that old type of relay was that in some circumstances they suffered from residual magnetism and wouldn't release properly. An appropriately placed piece of sellotape usually cured that problem!

I didn't find a stocking large enough for the VGA colour monitor I wanted for the computer, however Xmas came early this year and I now have a Tystar one. It is performing very well and is giving excellent results, so good that I might have a Framestore for sale - uncased of course! Perhaps I ought to hang on to it just in case of the unexpected. Progress never seems to stop and the PCSAT-3 operation has been very well received with many units having been mailed from this location. There have been several developments, all on the software side, and we might have to allocate space in the Newsletter just for it alone. However to date the following is valid :- the release of a programme called PROANIM cured most if not all of the problems with the animation software. One problem remained (that we know of) - the ProDesigner 2 graphics card with 1 MByte only gave a small magnification in the zoom mode. SATSHOW has cured that giving very satisfactory operation and is a very useful image handling and processing programme, but will only work on 286 up machines.

All of the early purchasers who need these extra file upgrades can obtain them from me for the sum of 2 pounds plus a SAE. I can only supply in 720k 3.5inch or 360k 5.25 inch at present but this might be upgraded in the near future. It would also be useful to compile a public domain software library facility for programmes mainly connected with image handling and satellite tracking. Suggestions and help on this one would be very welcome but we already have a few ideas. Watch this space.

An Electronic Bulletin Board (EBB) would also be a useful addition to the facilities we provide. Bob Leggett originally tried one but didn't have many takers at the time. That was quite a few years ago and we think it would be a definite goer this time. It would mean more equipment and a dedicated phone line. Quite a few of you use the various ones already available and it would be a boon if we could update it regularly. Write to me with suggestions for the BBS & offers of Public Domain image processing software.

HRPT has now come over the horizon and will hopefully be available off the shelf before long. The last Committee meeting decided that we should eventually have a system of our own but further details have yet to be finalised. Some of the images could then be put on the EBB for you to download at will. Use of the Image handling package programs currently available would then give you an interesting facility. There has to be some snags connected to all this - cost.

During this past year we have had the increase in printing costs (not as large as expected) and in September postal charges were increased. I think that we have managed to weather(!) the storm and come out of 1990 without too much of a loss, even a profit!, but it does worry you at the time. The committee have decided that in view of all these things we ought to have a little more leeway for the groups future and will have to increase the subscription to £8 in the UK + £2 additional postage for the European members. Members further afield than Europe will be + £4 extra. The postage to this last group has increased enormously this last year and we are absorbing some of the increase to help you. The most important thing is that at the end of 1991 we are still there to help you! Our colleagues at Dallas have had their problems during 1990 but I think that they are all sorted out now. One letter in the last Newsletter mentioned this and hopefully someone over there will have cleared the problem by now. I was sent their 1990 2 & 3 edition recently, for which I was very grateful, and wish them an easier time in the future. I had asked my committee to get my name on their subscription list but perhaps mine too had got lost. When you are in the same business you can understand the trials and tribulations encountered. Well, because this Newsletter is supposed to reach you before Christmas I will wish everybody Seasonal Greetings, but because of our recent track record I'd better include the New Year and probably Easter! I hope we have improved a little and we will try to get back on schedule in 1991.

Best 73's for Christmas and the New Year.
Henry

Happenings in Norway
Dr. Bjorn Bjortorp

A Coincidence:
Newsletter No. 20 described the radio code clock from Cirkit, the Rewbichron 2, but I already had mine on order, so I eagerly awaited delivery. In the fullness of time it came - but the receiver head was out of stock - consequently I received only the decoder - WHAT NOW? Of course, a RIG man reaches for the ubiquitous tone decoder chip NE567 and fuses it with 0.47 uF and a 10K preset i.e. some 250 HZ to 1200 HZ. Further, he builds a VLF converter (Adrian Nash, RIG 12), he switches his trusty old receiver to SSB, BFO on, and he puts it all together. Yea, verily it works! BUT, the distance from Rugby to Sandiford is 1100 km (690 miles) over water which makes for an interesting concave propagation test.

Now for the important bit. The signal from MSF on 60kHz is A1, interrupted carrier, and the output from the receiver to the tone decoder is an (adjustable) tone. This can be fed directly to the tape recorder, track B, together with the 2400 Hz separate sync. The tone frequency must - and can be adjusted not to interfere with sync and framestore start/stop tones. The MSF tone should be as low as possible both in level and frequency. On replay the output from the tape track B is fed to the NE 567 tone decoder/MSF clock and VOILA! Instant and accurate time for your recorded pictures. Well, perhaps not quite instant since one clock frame is 1 min. and you need a minimum of one whole frame. Still, it's a very simple way of recording time.

For us long distance users of the time signal there are drop outs due to low fading, interference, etc. but so far they can be counted in minutes per day.

Why don't I use the signal from DCF 77 on 7.75 KHz, Mainflingen in Germany, 900 km from here? Because the cheapest decoder clock costs about 5 times as much as the MSF clock, that's why!

What is that noise?
Gather round all you searchers of truth and listen to a tale of Bjorn the Berserk diligently searching for that which interfered with NOAA 10 and caused his disposition to become an example to all who went out to rape and pillage. His new, sombre expression was copied with success by all the Danegild tax collectors! Let the tale unfold:

The date was July 25th 1990, the time 0230 UTC, the frequency 137.46 MHz +/- 50 KHz. A strong carrier was there and there was one on 136.36 MHz as well. Once is a single occurrence!

The date was July 31st 1990 and the plot thickened. Strong, modulated carrier at 137.46, unmodulated carrier at 136.36. AOS 0310, LOS 0339. Also AOS 0510, LOS 0533. By Odin, a satellite! On the last pass it interfered with NOAA 10. The picture on the framestore looked like data transmission with frames repetition frequency 480 lines/min. Twice is coincidence! And three times an enemy action!

As the days went by the interference to NOAA 10 grew stronger as did the interference on 137.40 (OKEAN). On 136.36 the carrier was sometimes modulated with eerie tones like the sounds of birds searching for a final resting place.

The Norwegian Telecom was tried, and they knew nothing. The Army, Navy and Air Force likewise. The local radio amateurs hadn't a clue! Trouble comes from the East, they say, so it had to be the Russ. A phone to Les Currington was called for as well as pictures of the interference pattern sent to him by post. A few days later Geoff Perry was on the phone and he had solved the problem: the interfering satellite was INTERCOSMOS 24, "AKTIVNY', 89-80A, No. 20261. At the time of telling this tale, Sept 12, the interfering signal is still going strong.

A second coincidence

The satellite AKTIVNY or AKTIVE was supposed to carry out VLF experiments on propagation and artificially created "natural" VLF signals such as whistlers. These signals were to be monitored in the USSR as well as by TRW Space & Technology Group, Redonds Beach, CA. Nothing ever worked except the VHF and VHF equipment! The US monitoring ceased on June 1st due to lack of funds, but evidently the Russians are using the satellite for further experiments or they have just not bothered to turn it off.

136.36 MHz is a relay frequency for VLF signals, and sometimes normal transmitters such as OMEGA came through. Hence the ghastly tones and wails.
I'm interested in VLF phenomena and tracked and listened to AKTIVNY long before I became a RIG member. It's a small world.

HOT OFF THE PRESS - Gordon Fleming

For the beginner and those of us who struggle to keep up with technical progress the BERNARD BABANI books have always offered an uncomplicated solution in that their easy to understand diagrams and text on many subjects, provide the reader with an easy path to learning about a hobby or when constructing something electronic.

The latest BABANI book to hit the bookshops is called "An Introduction to Amateur Communications Satellites", the author is Alan Pickard but unfortunately that is all I know of him other than he is fascinated with the subject he has written about and his book is dedicated to Cheryl - Lucy and Alice.

As I wanted to make a brief mention in the RIG Newsletter I have only had time to cast a cursory glance at the book as I needed to meet the printing deadline, but what I have seen of the book I feel is very good, my initial observations though had me to believe that the author is not aware of RIG's existence or it was a deliberate omission on his part not to mention our group, particularly because in his appendix 4 he is advising his readers to write to the D.T.I. regulatory department for permission to officially receive weather satellite data.

Were he more aware of RIG and its benefits I am sure he would have recommended his readers to join the group as this confers authority on members to receive under the blanket agreement given to us by the D.T.I. perhaps because they wanted to avoid being deluged by individual requests for letters of authority.

My remarks though should not detract from what I find to be a well explained and illustrated book which is attempting to simplify a difficult subject, particularly for newcomers to Satellite and Space Technology.

I am sorry that time does not allow me to go into any great detail of the subject matter, but you will find sections dealing with TELEMETRY TRACKING & COMMAND - UOSAT - NOAA - METEOSAT - GROUND STATIONS - SYSTEMS - AERIALS - RECEIVERS - SPACE RESEARCH - USEFUL ADDRESSES - SUPPLIERS, also information on further reading.

Whilst the book deals with some systems it's not got all systems in that are available and I feel that when the book comes up for reprint it

should include reference to others such as the MARTELEC AMIGASAT System which I briefly referred to in the last RIG Newsletter.
Even so I do like the book and feel it is worth every penny I paid for it. If you are looking for some easy reading on this subject in the New Year then I can commend the book to you.

It is priced at 3 pounds 95p so place an order with your local bookshop.
May I, as is now the last week in November wish you a Merry Xmas and a Happy 1991.

THE BOOK ISBN NO IS 0-85934-235-2

What goes wrong with the Predictions?
by Phil Seaford

Several members have contacted me and other committee members regarding the accuracy of the predictions.
"They are 20 minutes out" its been said!!

I will try to explain:
The source data that Bob uses to produce the predictions is the TBUS transmissions from station KWBC in the USA and relayed via Bracknell on 14.355 MHz. This is a RTTY transmission and you need a teleprinter or the modern day equivalent, a terminal unit (ST5 for example to change the tones into 1's & 0's that the computer understands), a computer/system & display.

Three transmissions are sent (TBUS1, 2 & 3) one for each of the operational satellites (NOAA 9,10 & 11). The transmissions do not occur to a regular schedule but can be received normally between 10pm and midnight every day. A sample output is shown below (header & Part IV only) for NOAA 10. This was used to produce this issues predictions.

Producing predictions is not an exact science!

The TBUS figure enclosed by >>> <<< is the orbit period used for the predictions, and is approximately 101 minutes. Now a reference orbit (time the satellite crosses the equator at a given longitude) where the satellite would be receivable as it passes over

our part of the world; is used as the base data. To create a prediction for the next orbit, the orbit period is added to the EQX time and the orbit increment (effectively the degrees in longitude the Earth has moved under the satellites orbit, approximately 25 degrees) is added to the previous reference.

This process is repeated over 1200 times (14 orbits a day x 90 days) to cover the normal 3 month prediction period. Only those orbits where the satellite is in range are of interest and a subset of these are used in the newsletter. Certain rule of thumb adjustments are made to the results based on previous predictions.

It is very important to notice that a small error in the reference orbit, say 0.5 seconds will give rise to 10 minute error in 3 months time. This is incredibly elementary mathematics and totally ignores the fact that the physical characteristics of an orbit will undoubtedly change during the life of the predictions. This is one of the reasons that the TBUS data is re-calculated and transmitted **every day** from station KWBC. As an old colleague at work said to me they are estimates not forward actuals!

TBUS explanations were published in RIG issues 3 & 4 (now out of print) and I expect we will revise them further and reprint in a 1991 issue. Any input or comments from members on this topic would be most welcome.

NNNN
11-29-1990 22:45:27
TBUS1 KWBC 291900
APT PREDICT
120235 NOAA 10
PART IV
1986 073A 21849 336030161047 901202004325914 0814664
01011388 >>>>>>01011947 <<<<<<<< 00140352 14138153
00011593 09858136
21884487 07187807 P072014290 P000145670 M000000000
M00012467 M01109089 P07354181 001275939 145180010 9449
0000499999 M00282864 P00097583 P00512563 SPARESPARE
APT 137.50 MHZ, HRPT 1698.0 MHZ, BCN DSB 136.77 MHZ.
APT DAY/NIGHT 2,4/3,4. VIS CH 2 /0.725 TO 1.0/ AND
IR CH 4 /10.5 TO 11.5/ XMTD DURING S/C DAY. IR CH 3
/3.55 TO 3.93/ AND CH 4 /10.5 TO 11.5/ XMTD DURING S/C
NIGHT. DCS CLK YR/DAY/TIME 90 243 51629.326.
LAST TIP CLK CORR 06/26/90. CLK ERR AFTR CORR PLUS 00.30
SEC. CLK ERR AS OF 11/26/90 MINUS 00.60 SEC. ERR RATE AS
OF 11/26/90 MINUS 07.00 MSEC/DAY. NEXT CLK CORR 12/25/90

FRAME STORE CONSTRUCTION
by Maurice Wigg, G3ZCJ

Having built both the boards required for the YU3UMV Frame Store, plus the additional boards, the problem then is to puzzle out how to mount them to give free access to each for alignment etc. and for each board to be quickly demountable.

Maybe others in the past have followed a similar line, but for what it is worth I submit my solution with the hope that it may help someone perhaps, from a relative newcomer much enjoying it all.

The sketch gives most of the constructional detail required, and can be built up as a separate unit or with advantage to combine it in a rack to hold both the receiver and the frame store, which is what I will try and describe.

There has been on the surplus market many frames, approximately 17" length, 6.8" high by 11.4" depth inside measurements, and of aluminium construction. These frames are made to hold a number of printed circuit boards sliding in runners to sockets at the rear, and all probably conform to a standard size.

One of these can accommodate both receiver and frame store to make up a tidy, professional looking unit, the rear sockets and many of the slides no longer required.

The space occupied by the frame store needs to be the length of the YU3 boards plus slight clearances at each end, with slides reinstalled to suit the positions of the two frame store side panels, after the side panels have been made off. The front panel can then be measured up accurately. My side panel step down is 1.3/4" to give clearance for the Dartcom A-D convertor, and the sideways platform approx one inch wide.

All PCB'S require a 3/8" distance piece under each mounting point to lift clear of chassis, and by far the best way is for each 6 B.A. mounting screw to be held captive by a fully tightened 6 B.A. tapped spacer pillar upon which the PCB. sits. This allows each board to be easily lifted off, it being held in place by four 6 B.A. nuts or even better still, four more 6 B.A. tapped pillars screwed up finger tight.

As can be seen from the sketch, there is enough room for four mini switches down each side, i.e. the overhang portion, and all right, the rotary switches etc. that are in the middle section may be a little awkward to get at for large pairs of hands! That problem is quite easily solved by pre-wiring each item prior to fixing on the panel, leaving lengths of wire to connect elsewhere later.

An aluminium screen panel should be fitted between frame store and receiver, a tight fit between two more slides will do, and this panel could form part fixing for the receiver, at least the RIG one, which just fits in nicely behind its front panel. There is also enough room behind the receiver strip for a power unit, but magnetic screening may be advisable.

Top and bottom of the whole frame need covering with an aluminium panel, remembering some holes in the bottom for ventilation, though to save money, no doubt hardboard could be used for this but with baking foil suitably attached on the inside and making contact with the frame bars, most essential to hold back unwanted radiation.

The unit can be finished off by attaching to the aluminium end plates, wooden veneered chipboard to fit 1/2" higher top and bottom, and a touch of adhesive edging adds to the appearance. The small monitor loudspeaker can be attached to the receiver end plate, having a few holes drilled through combined aluminium and wooden end plates to let out more than enough of those dulcet tones that attenuate so steeply, even terminating without warning the continuation of domestic bliss??!!

For the record, tapped pillars can be obtained from:-

Electrovalue Ltd., 28 St Judes Road, Englefield Green, Egham, Surrey TW20 0HB, and they also supply an excellent component catalogue for mail order.

Maurice Wigg
G3ZGJ

Maurice Wigg diagram

photo - Maurice Wigg

SPACETECH HARDWARE AND SOFTWARE REVIEW
Part 1 - A Preliminary look at the Package.
by John Wedderburn

The computer I used for this review was an Archimedes 310. It is the basic machine with 1 Meg of memory. The Spacetech system has to be fitted by you and comes in three main parts:

1. The hardware podule
2. The framestore software disk and manual
3. The Animation software disk, data disk and manual

1. The Hardware Podule

The framestore manual has all the instructions for installing the podule. These are well written and easy to follow. The hardware is outstanding. It is easy to install and worked first time with no adjustment. Adjustments are possible and instructions are given if problems arise.

2. The Framestore software disk and manual.

The software is outstanding but like always the manual fails to give the new user any way of "getting on the air" so to speak without having to wade through all the "here and theretofores". Even after sometime of use I am finding the manual difficult to follow. (More of this later - a bit like the manual!!!)

2.1 Formatting Image Disks using the special format.

If you think you will want to save any screens of the image, it is well worth formatting a few disks in advance because once the system has data in it, the formatting process can corrupt the data. You have to use their formatting system ie *STRUCTURE as the system will otherwise not be able to save screens.

2.1.1 Select *commands and the system comes up with the usual '*' prompt.

2.1.2 Type in STRUCTURE O E. This formats the disc and puts on the all important structure for saving images. Once complete you exit back into the main system by pressing <Return>.

2.2 Amended Procedure to set up the System for Meteosat.

To give you some idea of how I set my system up for Meteosat I go through the following procedures (all of which you will find in the manual but all over the place):

2.2.1 Check that the ROM Podule is active. Sometimes it gets switched off by other software. So it is best to check.

2.2.2 Use the menu button on the palette to change to mode 15 or to check you are in mode 15.

2.2.3 Go to the task display using the 'A' icon, press 'menu', then execute on task display. Drag all the red bars across to as low a value as possible and then exit from the task display.

2.2.4 "Click" the execute on the disc icon to bring up the directory window and double click the !framestore icon.

2.2.5 Then, once installed, single click the framestore icon.
This takes you into what they call the run screen. Initially it is blank with the right hand side containing the information/action bars and along the bottom the status bar. The main menu window is brought up using the menu button on the mouse with the point on the right hand side of the screen. It comes up under the pointer.

2.2.6 The default image format is Meteosat. So if that is what you want then take the next step. If you want another format then you have to click the disk files on the main menu, then 'setup' and then, from the disk file menu, the one you want.

2.2.7 Switch on your receiver. Get the "noise" you want! Connect up the receiver to the podule with an audio lead (The podule has a phono plug connection.)

2.2.8 When the signal form the satellite comes in at the very beginning, use the auto calibrate to get the black and white levels correct.

2.2.9 Click the red "lightning" square in the middle of the information/action bar. The 'VU' meter bar should now be active, giving you a visual indication of the black and white levels as they come in.

2.2.10 The frame should start to appear. It sometimes does not but I've found that altering the white level one or two points using the mouse on the information/action bar usually gets it started.

Once you have got the hang of it, the software has some really nice points. Using the auto calibrate is made very easy by making the pointer appear in the exact position you need to use it next. Little touches like this make the software very user friendly.

2.3 Now for things I feel that could help improve the manual.

2.3.1 It has at the bottom of page 9 a note to say 'Check for bent pins etc if the podule does not respond correctly.' I suggest they add one more. I found the system did not respond as suggested in the Framestore manual. So after a little thought all that was necessary was to make sure I had initialised the podule as a ROM Podule!!.

2.3.2 It would help the new user to have a clear route through the manual without having to consider options like hard disks and so on. For those with hard disks I'm sure they would much prefer to have a whole section devoted to their particular problems rather than wading through bits irrelevant for them.

2.3.3 It uses the graphic approach at the beginning but after a while you are left in the dark. I feel it would definitely help if this were carried on throughout.

2.3.4 Some of the jargon I found difficult to understand at first but I must say it became more obvious as I got into the manual. More cross-referencing would help. Especially to find parts you were not quite sure about and need. A 'for instance' is the formatting of disks for image capture. There is no reference, other than the index, as to where to find it as you are reading through.

3. Animation Software disk, data disk and manual.

This software allows you to capture and animate data from Meteosat for which it is designed. It again takes a while to assimilate the manual. This is not all that surprising considering the complexity of the system. However my main criticism still holds, in that, a short, no frills introduction would help, just to get the feel of the system. Something like this for instance:

3.1 Click up the main menu of the system disk.
Double click the !animation icon.

3.2 Click the extended animation bar.

3.3 Click 'C' (for command screen)

3.4 Remove system disk.

3.5 Put in data disk

3.6 Mount data disk in drive 0 by clicking the high lighted area in the 'MOUNT' window.

3.7 Click the data file in the MENU window.

3.8 Click LOAD in the 'FILE ACTION' window.

3.9 Wait for it to load then click the RUN window. This takes you to the RUN screen which was blank but now has a backdrop visible.

3.10 To start animating click the triangle just above the 'T'. To stop, click the square. As animation takes place you will see the line like a clock face rotate which gives a visual indication as to where you are in the animation cycle and how many frames manually using the same clock face and the mouse. Under the 'T' is a bar which can be dragged up using the select button held down and moving up the screen in the usual way. This has the effect of speeding the animation up.

3.11 To save a session you have to format your disk in their special way and again it is best done before you start capturing frames. From the command screen enter the '*' command screen and as before use *STRUCTURE O E.

Press <Return> at the end as before. It is important when saving a session as they call it to save the files at the bottom first ie Frame then Palette then Schedule and so on. Make sure you have everything connected up and there is a usable signal; coming from the satellite into the podule.

In practice what I do from the command screen is this:

- Load the data demo disk.
- Clear the frames. This leaves all the other bits like Palette,
- Schedule and the like still in memory.
- Click the Timetable window and check that what it shows is what you want.
  If not, select which Meteosat schedule you want.
- Click RUN to get to the RUN screen.

At this point you will find nothing will happen until the desired frame from Meteosat is being received. It is a good idea to make sure the internal clock is set at GMT and slightly fast by about 30 seconds. In this way the software is ready and waiting before things start to happen.

I have not mentioned anything about printing so far. As yet I have not been successful with my 1 Meg machine in doing this. By the time I have put in the printer driver module and the Spacetech software, there is precious little space for data!

My overall view of the system is that it is fantastic value for money. At about £300 for the lot it beats anything like it on the market hands down. The hardware and software are excellent and as always its a pity about the manual. However I'm sure they will get that right in due course.

In the next part I will describe the more advanced aspects of the software and hopefully some aspects of printing out the data. I have found Mr and Mrs Hornby who run Spacetech a pleasure to do business with. They have always been very helpful with any problems that have occurred. Their address and telephone number is:

Spacetech, L E Hornby
21 West Wools, Portland
Dorset DT5 2EA Tel No: 0305 82275

THE SOVIET AND CHINESE SATELLITE SCENE
by Les Currington, G8LOK

Mid winter is not the best time to get excited about good visible Weather Satellite pictures, unless one is viewing the Meteor 3 series IR when some quite spectacular winter storms show up. At the time of writing the Meteors are not switching on to visible transmission during a descending pass until well over Scotland. However by February we should be seeing some interesting pictures of Scandinavia when the Lakes and frozen ground show up with fantastic clarity.

Several members have asked would it be possible to write an article on the identification of Satellites images by sound and diagrams; this I will try to do in the next addition of RIG.

It would probably be wise to suggest that all the present Meteors appear to be in a parking orbit and are brought into service when solar conditions permit, also with a possible change of frequency to either 137.3 or 137.85 MHz.

TRANSMISSION STATUS AS AT 29/11/90:

Meteor 2-17 137.3 MHz
Now in a mid-morning ascending pass with normal visible transmissions

Meteor 2-18 137.3 MHz
Now in a period of total darkness over UK and should be seen again in a late afternoon descending orbit in February.

Meteor 2-19 137.3 MHz
Meteor 2-19 has not been seen for some considerable time.

Meteor 2/20 137.3 MHz
Meteor 3-3 has now been brought back into service from a parking orbit after a period of silence. The two descending morning passes on the 28/11/90 where of good quality.

Meteor 3-2 137,85 MHz
Now in a period of total darkness over the UK and should be brought back into service in mid-March in a late afternoon ascending orbit.

Meteor 3-3 137.85 MHz
Meteor 3-3 is now back into service after a brief period of silence,the morning descending pass on the 28/11/90 was suffering from occasional streaking which has been a intermittent problem since launch.

Okean 2 137.4 MHz
After a period of brief short transmissions most days it is now only seen occasionally..

Feng Yun 1-b 137.795 MHz
Transmissions have continued and from reports by various members are of excellent quality.The high resolution transmission are also reported to be of excellent quality. It is unfortunate that the near overhead orbit should have been around 08.00 gmt when solar illumination is so poor.

More on using the predictions by Phil Seaford

Like many members I do not have the time to monitor the NOAA satellites on a daily basis. Several members, I'm sure, have not looked at a satellite for a month, gone to the predictions for a time and then switched on a receiver, only to be disappointed at hearing the tail end of a pass or nothing at all.

This is unreasonable use of the predictions in my view.

The predictions will without doubt drift out with the passage of time, to be either early or later than the times published. The experienced user, (or those who want to be!) should use the predictions on a regular basis and note which way the times are changing from the predictions and at what rate.

For example, if after one week the satellite is appearing one minute earlier then pencil in a -1 against that particular time. Using that as a guide take off a minute for each prediction in the following week. If after two weeks the satellite is a further 1 minute late then you know the trend is a drift back by one minute per week. This way you can use the predictions intelligently and not miss any passes.

Good luck
Phil

KEPLER ELEMENTS
provided by Max White - Kettering Group

	NOAA 9 137.62 MHz 84-123	NOAA 10 137.50 MHz 86-73	NOAA 11 137.62 MHz 88-89
EPOCH OF DATA	90334.21373281	90334.06248660	90333.37790720
ACCELERATION	0.00000269	0.00000399	0.00000253
REV NO.	30742	21821	11227
INCLINATION	99.1723	98.5853	99.0034
R. A. NODE	337.9666	358.1957	282.0381
ECCENTRICITY	0.0014282	0.0013759	0.0012355
ARG OF PERIGEE	262.8752	143.4103	174.9325
MEAN ANOMALY	97.0796	216.8018	185.1973
MEAN MOTION	14.12739035	14.23810582	14.11806615

	MET 2-16 137.85 MHz 87-68	MET 2-17 137.30 MHz 88-05	MET 2-18 137.30 MHz 89-18
EPOCH OF DATA	90332.04133326	90331.75678490	90331.98826988
ACCELERATION	0.00000219	0.00000239	0.00000190
REV NO.	16564	14281	8822
INCLINATION	82.5495	82.5448	82.5121
R. A. NODE	160.4204	220.4189	97.9610
ECCENTRICITY	0.0011853	0.0015233	0.0012799
ARG OF PERIGEE	147.0173	223.8664	267.8018
MEAN ANOMALY	213.1711	136.1275	92.1676
MEAN MOTION	13.83704275	13.84397735	13.84027721

	MET 2-19 137.85 MHz 90-57	MET 2-20 137.30 MHz 90-86	OKEAN 2 137.40 MHz 90-18
EPOCH OF DATA	90329.02543228	90332.06154856	90331.99323990
ACCELERATION	0.00000154	0.00000137	0.00000936
REV NO.	2076	840	4019
INCLINATION	82.5484	82.5247	82.5247
R. A. NODE	161.0062	97.8451	306.8027
ECCENTRICITY	0.0014920	0.0014662	0.0021689
ARG OF PERIGEE	193.6645	81.3584	101.2102
MEAN ANOMALY	166.4104	278.9236	259.1506
MEAN MOTION	13.83879772	13.83240219	14.73768211

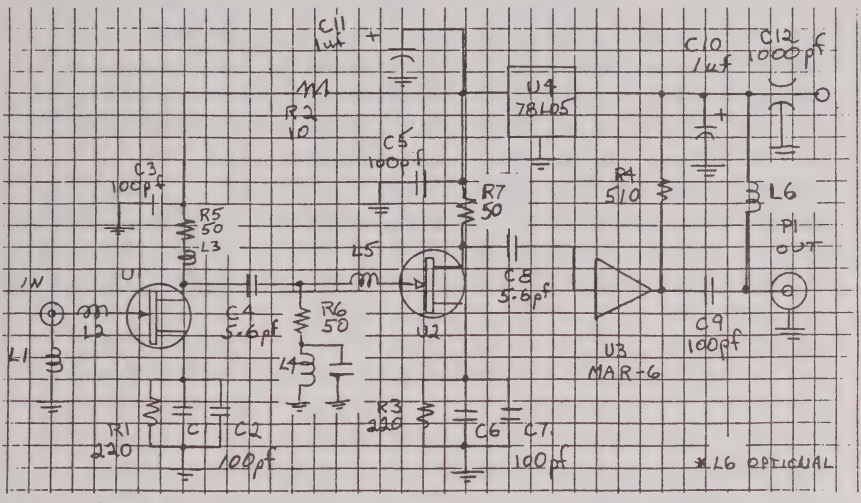


Fig. 1 — Circuit diagram.

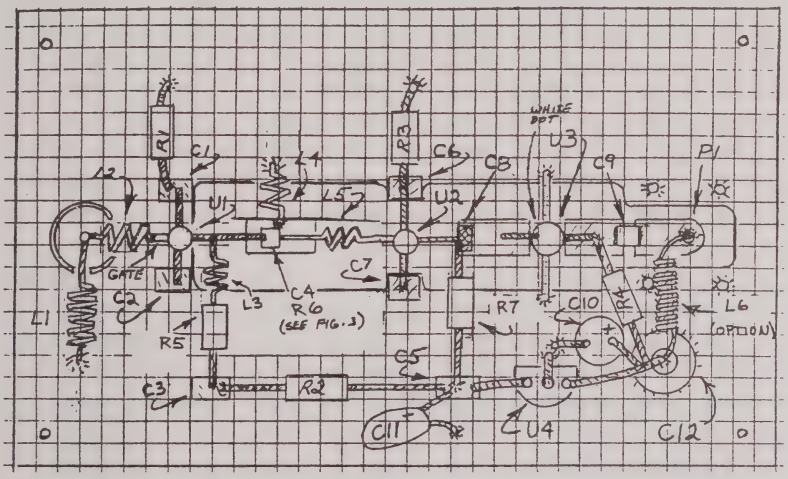


Fig. 2 — Parts layout.

NOAA '10' PERIOD 101.1949 MINS INCR 25.299 DEG

1/01 185 07:38	31/01 188 07:48	28/02 354 18:52	31/03 351 18:39
1/01 337 17:45	31/01 339 17:55	1/03 348 18:29	1/04 345 18:16
2/01 331 17:22	1/02 182 07:25	2/03 342 18:06	2/04 188 07:45
3/01 350 18:40	1/02 334 17:32	3/03 185 07:35	2/04 339 17:53
4/01 345 18:16	2/02 353 18:50	3/03 336 17:42	3/04 182 07:22
5/01 187 07:46	3/02 347 18:27	4/03 331 17:19	3/04 334 17:29
5/01 339 17:53	4/02 190 07:56	5/03 350 18:37	4/04 353 18:47
6/01 181 07:23	4/02 342 18:03	6/03 344 18:14	5/04 347 18:24
6/01 333 17:30	5/02 184 07:33	7/03 187 07:43	6/04 190 07:53
7/01 352 18:48	5/02 336 17:40	7/03 339 17:50	6/04 341 18:01
8/01 347 18:25	6/02 330 17:17	8/03 181 07:20	7/04 184 07:30
9/01 189 07:54	6/02 355 18:58	8/03 333 17:27	7/04 336 17:37
9/01 341 18:01	7/02 349 18:35	9/03 352 18:45	8/04 330 17:14
10/01 183 07:31	8/02 344 18:12	10/03 346 18:22	8/04 355 18:55
10/01 335 17:38	9/02 186 07:41	11/03 189 07:51	9/04 349 18:32
11/01 354 18:56	9/02 338 17:48	11/03 341 17:59	10/04 343 18:09
12/01 349 18:33	10/02 332 17:25	12/03 183 07:28	11/04 186 07:38
13/01 343 18:09	11/02 351 18:43	12/03 335 17:35	11/04 338 17:45
14/01 185 07:39	12/02 346 18:20	13/03 354 18:53	12/04 332 17:22
14/01 337 17:46	13/02 188 07:49	14/03 348 18:30	13/04 351 18:40
15/01 331 17:23	13/02 340 17:56	15/03 343 18:07	14/04 346 18:17
16/01 351 18:41	14/02 182 07:26	16/03 185 07:36	15/04 188 07:46
17/01 345 18:18	14/02 334 17:33	16/03 337 17:43	15/04 340 17:54
18/01 187 07:47	15/02 354 18:51	17/03 331 17:20	16/04 182 07:23
18/01 339 17:54	16/02 348 18:28	18/03 351 18:38	16/04 334 17:30
19/01 182 07:24	17/02 190 07:57	19/03 345 18:15	17/04 353 18:48
19/01 333 17:31	17/02 342 18:05	20/03 187 07:44	18/04 348 18:25
20/01 353 18:49	18/02 184 07:34	20/03 339 17:51	19/04 190 07:55
21/01 347 18:26	18/02 336 17:41	21/03 181 07:21	19/04 342 18:02
22/01 189 07:55	19/02 330 17:18	21/03 333 17:28	20/04 184 07:31
22/01 341 18:02	20/02 350 18:36	22/03 353 18:46	20/04 336 17:38
23/01 184 07:32	21/02 344 18:13	23/03 347 18:23	21/04 330 17:15
23/01 335 17:39	22/02 186 07:42	24/03 189 07:52	21/04 355 18:56
24/01 330 17:16	22/02 338 17:49	24/03 341 18:00	22/04 350 18:33
24/01 355 18:57	23/02 181 07:19	25/03 183 07:29	23/04 344 18:10
25/01 349 18:34	23/02 332 17:26	25/03 335 17:36	24/04 186 07:39
26/01 343 18:11	24/02 352 18:44	26/03 355 18:54	24/04 338 17:47
27/01 186 07:40	25/02 346 18:21	27/03 349 18:31	25/04 332 17:23
27/01 337 17:47	26/02 188 07:50	28/03 343 18:08	26/04 352 18:41
28/01 332 17:24	26/02 340 17:57	29/03 185 07:37	27/04 346 18:18
29/01 351 18:42	27/02 183 07:27	29/03 337 17:44	28/04 188 07:47
30/01 345 18:19	27/02 334 17:34	30/03 331 17:21	28/04 340 17:55

All morning passes are southbound, evening passes are northbound.
Frequency 137.50MHz. INCRement is degrees change per orbit.

RIG SUBSCRIPTION 1991 - RENEWAL

If you would like to renew your membership of the group and continue to receive the newsletter then please complete the form below not forgetting to complete the survey and send it to **Des Watson** our membership secretary whose address is below.

Recent joiners are reminded that the subs run from January to December and unless you specifically paid in advance for 1991 then your subs are due now. If our records show that you have already paid for 1991 then the label on the envelope containing this newsletter will say "PAID 91".

The fees for 1991 are as follows:

UK membership		£8.00
European membership	(£8.00 + £2.00 post)	£10.00
Outside Europe	(£8.00 + £4.00 post)	£12.00

(All non UK post will be sent by air mail as 'PRINTED PAPERS')

Cheques must be made payable to "REMOTE IMAGING GROUP".
Send your completed form (including the completed survey) to:

Mr. Des Watson, SUBS 91
Norton, Gote Lane,
Ringmer, Near Lewes,
East Sussex, BN8 5HX
ENGLAND

NAME: _____ CALL SIGN _____

ADDRESS: _____

_____

_____ POST CODE _____

COUNTRY _____

TELEPHONE NUMBER: _____

When writing in to the group please use your callsign if you have one.

(Doc ref RG-SUB91 30 Nov 90)

MEMBERSHIP SURVEY AT END OF 1990

In order to understand what current/new members of the RIG are currently interested in we have compiled the questions below which we hope all members will complete. This survey is conducted every year and the results published in the newsletter.

Please feel free to add any futher comments or suggestions on the reverse side of the survey form:

Yes/No

1 Are you currently receiving weather satellites on VHF? ___

2a Are you receiving Meteosat IV ? ___

2b If yes, what kind of aerial? (Dish? Yagi?) _____

2c Also, what make of downconverter? (Dartcom?, LMW?...) _____

3 Are you receiving HRPT from NOAA or are you a PDUS for Meteosat? ___

4 Are you involved in education?: ___

5 What display equipment do you use: Photographic fax ? ___

micro computer?___ normal fax?___

Spacetech/Archimedes? ___ YU3 framestore?___

PC SAT III? --- Other? ___

6 Do you use a micro computer for weather satellite work? ___

If yes which one?: _____

For what applications (display? predictions?) _____

7 For UK members only

Do you object to your name and address & phone details

a) being held on a computer? ___

b) being given to RIG members in your vicinity? ___

8a Do you suffer from any forms of interference? ___

8b If yes to 8a), has it changed since the last survey? ___

PTO

9 Manufacturers Survey:

We are trying to determine to determine the spread of manufacturers equipment used by our members. Please tick below the 'makes' you use:

Cirkit	-----
Unilab	-----
Dartcom	-----
Timestep	-----
Martelec	-----
Maplin	-----
MicroWave Modules	-----
SpaceTech	-----
ICS	-----
Feedback	-----
LMW	-----
Others (please specify)	-----_

10. Feel free to add your comments here:

NOAA '11' PERIOD 102.0537 MINS INCR 25.51 DEG

1/01	188	02:52	30/01	183	02:32	3/03	347	13:33	3/04	183	02:38
1/01	341	13:05	30/01	336	12:45	4/03	344	13:22	3/04	336	12:51
2/01	185	02:41	31/01	333	12:34	5/03	188	02:58	4/04	333	12:39
2/01	338	12:54	1/02	330	12:22	5/03	342	13:11	5/04	330	12:28
3/01	182	02:30	2/02	353	13:53	6/03	186	02:47	6/04	353	13:59
3/01	336	12:42	3/02	350	13:42	6/03	339	12:59	7/04	350	13:48
4/01	333	12:31	4/02	347	13:31	7/03	183	02:36	8/04	347	13:36
5/01	330	12:20	5/02	344	13:19	7/03	336	12:48	9/04	345	13:25
5/01	355	14:02	6/02	188	02:56	8/03	333	12:37	10/04	189	03:02
6/01	353	13:51	6/02	341	13:08	9/03	330	12:26	10/04	342	13:14
7/01	350	13:39	7/02	186	02:45	10/03	353	13:56	11/04	186	02:50
8/01	347	13:28	7/02	339	12:57	11/03	350	13:45	11/04	339	13:03
9/01	344	13:17	8/02	183	02:33	12/03	347	13:34	12/04	183	02:39
10/01	188	02:53	8/02	336	12:46	13/03	344	13:23	12/04	336	12:51
10/01	341	13:06	9/02	333	12:34	14/03	189	02:59	13/04	333	12:40
11/01	185	02:42	10/02	330	12:23	14/03	342	13:11	14/04	330	12:29
11/01	338	12:54	11/02	353	13:54	15/03	186	02:48	15/04	353	14:00
12/01	183	02:31	12/02	350	13:43	15/03	339	13:00	16/04	350	13:48
12/01	336	12:43	13/02	347	13:31	16/03	183	02:37	17/04	347	13:37
13/01	333	12:32	14/02	344	13:20	16/03	336	12:49	18/04	345	13:26
14/01	330	12:21	15/02	188	02:57	17/03	333	12:38	19/04	189	03:02
14/01	355	14:03	15/02	341	13:09	18/03	330	12:26	19/04	342	13:15
15/01	353	13:51	16/02	186	02:45	19/03	353	13:57	20/04	186	02:51
16/01	350	13:40	16/02	339	12:58	20/03	350	13:46	20/04	339	13:03
17/01	347	13:29	17/02	183	02:34	21/03	347	13:35	21/04	183	02:40
18/01	344	13:18	17/02	336	12:46	22/03	345	13:23	21/04	336	12:52
19/01	188	02:54	18/02	333	12:35	23/03	189	03:00	22/04	333	12:41
19/01	341	13:06	19/02	330	12:24	23/03	342	13:12	23/04	331	12:30
20/01	185	02:43	20/02	353	13:55	24/03	186	02:49	24/04	353	14:00
20/01	338	12:55	21/02	350	13:43	24/03	339	13:01	25/04	350	13:49
21/01	183	02:32	22/02	347	13:32	25/03	183	02:37	26/04	348	13:38
21/01	336	12:44	23/02	344	13:21	25/03	336	12:50	27/04	345	13:27
22/01	333	12:33	24/02	188	02:57	26/03	333	12:38	28/04	189	03:03
23/01	330	12:21	24/02	342	13:10	27/03	330	12:27	28/04	342	13:15
24/01	353	13:52	25/02	186	02:46	28/03	353	13:58	29/04	186	02:52
25/01	350	13:41	25/02	339	12:58	29/03	350	13:47	29/04	339	13:04
26/01	347	13:30	26/02	183	02:35	30/03	347	13:36	30/04	183	02:41
27/01	344	13:19	26/02	336	12:47	31/03	345	13:24	30/04	336	12:53
28/01	188	02:55	27/02	333	12:36	1/04	189	03:01	1/05	333	12:42
28/01	341	13:07	28/02	330	12:25	1/04	342	13:13	2/05	331	12:30
29/01	185	02:44	1/03	353	13:56	2/04	186	02:49	3/05	353	14:01
29/01	339	12:56	2/03	350	13:44	2/04	339	13:02	4/05	350	13:50

All morning passes are southbound, afternoon passes are northbound.
Frequency 137.62 MHz. INCRement is degrees change per orbit.

LATE NEWS:

BINDERS FOR YOUR RIG NEWSLETTERS

As a result of several requests we are to make available to members some super binders that can hold up to 12 issues of the newsletter. The thickness of the newsletter will determine how many you will be able to get in. The newsletters are secured by removable metal rods. They will be blue in colour and have a gold blocked spine showing "RIG".

They will be available at rallies (£3.00 each) and by post from Ian Gurton. (£4.00 each) Ian can be reached on 0582 713770.

PHONE CALLS TO THE SECRETARY

Due to work commitments I will not be available to take phone calls during weekdays 3rd week of January until further notice. As my wife has yet to be recruited to the RIG fold I suggest that queries on various subjects be routed via the RIG helplines to the people concerned. If all else fails then call Henry on 0945 85353!

	MET 3-2	MET 3-3	FENG YUN 1B
	137.30 MHz	137.85 MHz	137.80 MHz
	88-64	89-86	90-81
EPOCH OF DATA	90333.96992456	90328.80575896	90330.09862602
ACCELERATION	0.00000025	0.00000005	0.00000397
REV NO.	11277	5207	1177
INCLINATION	82.5466	82.5524	98.9335
R. A. NODE	160.1516	104.7328	2.9135
ECCENTRICITY	0.0016216	0.0015680	0.0011116
ARG OF PERIGEE	261.7550	290.2485	31.9177
MEAN ANOMALY	98.1729	69.6960	328.2441
MEAN MOTION	13.16905867	13.15866479	14.00583082

Reference Orbits for Soviet & Chinese Satellites supplied by Dick Boardman

These are the times of north going equator crossing (in GMT) and longitudes (in degrees west) for three Russian satellites and Feng Yun 1b.
They are given at weekly intervals together with the period and the change in longitude per orbit.

MET 2-20
period 104.09 minutes increment 26.04 degrees

22DEC	00:07	12	28DEC	22:45	5	4JAN	21:25	357	11JAN	21:49	15
18JAN	20:29	8	25JAN	19:08	0	1FEB	19:32	18	8FEB	18:11	11
15FEB	16:51	3	22FEB	15:31	355	1MAR	15:55	13	8MAR	14:34	6
15MAR	13:13	358	22MAR	13:37	16	29MAR	12:17	9	5APR	10:57	1

MET 2-17
period 104.00 minutes increment 26.00 degrees

22DEC	7:56	8	29DEC	6:27	358	5JAN	6:42	14	12JAN	5:13	5
19JAN	3:44	355	26JAN	4:00	11	2FEB	2:31	1	9FEB	2:47	17
16FEB	1:17	8	22FEB	23:48	358	2MAR	0:04	14	8MAR	22:35	4
15MAR	22:51	28	22MAR	21:22	11	29MAR	19:53	1	5APR	20:08	17

FENG YUN 1B
period 102.87 minutes increment 25.71 degrees

22DEC	19:36	356	29DEC	19:38	357	5JAN	19:39	357	12JAN	19:40	357
19JAN	19:42	358	26JAN	19:43	358	2FEB	19:44	358	9FEB	19:46	359
16FEB	19:47	359	23FEB	19:48	0	2MAR	19:50	0	9MAR	19:51	0
16MAR	19:53	1	23MAR	19:54	1	30MAR	19:55	1	6APR	19:57	2

MET 3-3
period 109.41 minutes increment 27.37 degrees

22DEC	0:38	14	28DEC	22:42	356	4JAN	22:35	6	11JAN	22:28	17
18JAN	20:32	359	25JAN	20:25	9	1FEB	20:18	19	8FEB	18:22	2
15FEB	18:16	12	22FEB	16:19	355	1MAR	16:12	5	8MAR	16:06	15
15MAR	14:09	358	22MAR	14:02	8	29MAR	13:56	18	5APR	11:59	0

COMING SOON IN THE MARCH ISSUE WILL BE:

- Fron Italy, Marciano Rhigini is planning to send details of his PC based image processing and printing system.

- From New Zealand, Graham Moss will be sending in constructional details for a colour encoder module for the framestore

- plus predictions et al !!

HRPT, The Final Frontier ? Dave Cawley

This is a short article plotting the history of Timestep's involvement in HRPT. Further articles will more fully explain the advantages that RIG members can obtain.

HRPT stands for High Resolution Picture Transmission. It is carried on the NOAA orbiting satellites at 1.7GHz. Do not confuse this with Meteosat Primary data ! The satellites transmit 5 bands of information. Band 1 is the visible band as NOAA APT, band 2 is a mixture of visible and infrared that gives superb quality images even in winter, band 3 is an odd looking infrared image, bands 4 and 5 are the same as NOAA APT infrared.

The ground resolution is 1.1KM and the transmission is digital. It is these two characteristics that make HRPT so very attractive. Digital transmissions have no noise at all and combined with 1.1KM resolution (APT is 4KM) give the visual impression that the image is 10 times better than APT. HRPT will show rivers, towns and many, many natural features totally invisible to APT.

At the NASA - NOAA conference in June 88, I met John DuBois and several other satellite enthusiasts. John had the first USA amateur HRPT station in early April 88.
A few months later John sent a pile of drawings to me and other interested amateurs. Although the circuits were reproducible (just) not many systems were built. Earlier this year (1990) at the Dayton Hamfest John distributed via JESAUG a comprehensive paper on his improvements and achievements.

Late July 90 I visited John DuBois at his home in Massachusetts to see the system in action and negotiate the first licence to produce it outside of the USA. I came away with a set of drawings an a floppy disc. Dave Cutts turned the disc into a photographic negative with his Photo Plotting machine and less than a week after returning from the States we had a finished PCB in our hands !

There are many problems well documented in this magazine for the home constructor if he has to start from scratch. In fact without specialised test equipment it is virtually impossible. We duplicated John's design and using the appropriate in-house test equipment tested it on the bench. Needless to say the initial design was fine. At that time we did not have a sub 1dB noise figure pre-amp and

decided to use a 1.6M dish and a 1.6dB pre-amp. We estimated that this would give us at least 3dB in hand. After an afternoon's work with a welder and a car full of angle iron, we had persuaded our Yaesu G-5600 azimuth/elevation rotator to move the dish (counter balanced with a solid concrete block !). The next day armed with Instant Track, the system and our spectrum analyzer, we attempted to receive the first pass from NOAA 11. As predicted we did indeed have 20dB carrier to noise.

Tracking the dish by hand from the rotator control box is a lot easier that at first thought. Remember the pass is 15 minutes long. Provided the elements in Instant Track were OK we had no problems at all.

The data demodulator was built next and tested using the phase modulation facility on our microprocessor controlled RF signal generator. As with most current systems the data is fed into a PC. We used a standard 286 with our own UK made version of John Dubois card installed. The first attempt at actual picture capture was annoyingly unsuccessful. Many phone calls across the pond revealed an extra latch on the PC card we had not enabled. A rapid re-write of the software BETWEEN NOAA passes resulted in the first image. Noise free, super resolution and totally stunning !

The original software was supplied in development form and we have now finished a comprehensive mouse driven version. A file over 50Mb (or less if you have a smaller drive) can be saved and displayed at up to 1024 x 768 x 256 at transmitted or greater resolution.

Although the system seems easy, it is virtually essential that you do not jump in both feet first. Some experience of NOAA and Meteosat APT is a definite advantage. Get used to PC's and APT first ! Turnkey systems will be available later at increased prices for those without the experience or constructional facilities.

We are now working on production units that will receive both NOAA and Feng Yun on any VGA card fitted to a 286 or better PC. Systems will be available to RIG members at very advantageous prices. Henry Neale will probably have a system on demo and will be able to help RIG members get going at a low cost. You will need a 1M dish or a pair of good yagi antennas, a method of rotation and prediction, a good pre-amp, the HRPT receiver and the HRPT data card.

The first items can be from your existing Meteosat system. The last two items will come ready assembled and tested and cost well under £1,000.00. Providing there are no problems we will have units available late February.

Dave Cawley Managing Director Timestep Electronics Ltd

THIS MONTHS PICTURES

This month our images have been produced by Les Currington from Soviet satellites. The first is a lovely shot of Scandinavia taken in the Winter showing several frozen areas of in the Gulf of Bothnia. The second image was taken from the Soviet satellite Meteor 3-3. It's of Greenland right up to the North Pole and shows a lot of superb detail.

Members who say "I can't get that far" should be advised that Les use a beam aerial to extend his reception area.

Not to be outdone Bob Sansoni has called and has promised some HRPT images of Greenland too. These will show more detail as HRPT offers 1.1 km. resolution whereas APT offers 4km.

Watch this space.

PC WEATHER FAX - V4.01 & V5.00 USA PROGRAM

NB THIS REVIEW WAS MOSTLY BASED ON VERSION 4.01, BUT VERSION 5 ARRIVED JUST AT DEADLINE, AND HAS BEEN ALTERED TO REFLECT IMPROVEMENTS ADDED.

Fax program for IBM and compatibles. Cost £119.95.+ £2.50 P&P

The program is designed to display, fax pictures/maps received on the HF and LF bands, so a reasonable quality receiver and aerial system is requred, the better the signal, the better the quality obtained..

Review is based on using an XT and AT compatible computers, CGA and VGA displays, Epson FX80 printer, Trio R2000 and Icom 720 receivers, vertical aerial.

The package comprises of 60 plus page manual, with approx 200 pages of fax frequencies and schedules, 3 5.25 discs, pre-recorded cassette,, demodulator and cable.

Minimum computer requirements, are 512K memory, colour graphics adaptor, or Hercules compatible monochrome adaptor, single floppy disc drive and serial port.

Installation is simple, just copy the programs to the working disc. Two sample images are supplied, one chart and one picture, these take apprx. 250K each.

The demodulator is plugged into the 25 way serial port, and the cable into the speaker socket of the receiver.

GETTING STARTED

The tutorial cassette gives a good introduction and example of the signals to look for, the tape is in stereo with voice on one track and example signals on the other, if you only have a mono recorder/player this is a little difficult to understand when both tracks are playing at the same time. At the end of the tutorial there is a recording of a fax map without any voice.

Having listened to the tape and found a fax signal on the receiver, (4.782 MHz USB Bracknell) the program is now run.

The menu is split into 4 sections, Capture Options, Display Options, File Options, Control Options.

To make sure the receiver is tuned correctly a 'Tuning Scope' is selected from the Capture options. This displays a black and white screen with two horizontal bars. The top bar is the white level frequency reference, and the bottom the black frequency. The receiver is tuned so that the steady white tone lays just along the top of the white frequency line and the black (map lines) project down and towards the black frequency level, this means that any tone above the white line marker will give white, any tone below the black line marker will give black, and tones in between will give grey levels between the two. (It is also interesting to look at other data type signals using this display). I would liked to have seen more information about changing these settings in the manual, without having to go on the trial and error route.

The program uses the computers internal clocks to keep accurate synchronisation with the transmission, the first picture taken will probably lean to the left or right, this is due to the crystal in the computer not being an exact frequency, a timing correction is available from the Control Options menu. This will be needed to be done with each computer that you use the program in. With a picture being transmitted it only takes a few minutes to set up the timing, and as long as the program is always used on that computer you should not need to change the settings.

With the system now set, it is easy to start taking the maps, the letter C is pressed, the screen blanks. If no picture is coming in, the display will stay white. With a picture being transmitted, the screen will start to display the map as it is transmitted. It is most likely that you have started in the middle of a map and that it is not centred correctly, this can be ignored, as at the end of the transmission it can be centred easily, and saved if required.

If the map has just started and is sending the 'Phasing' information (a blip about twice per second for 30 secs) then the 'S' key will set up the map for correct viewing on the screen.

Most maps from Bracknell are sent at 120 lines per minute with an Index Of Co-operation of 576 (IOC). The IOC basically gives the length to picture width ratio. The IOC can be set from the values: 288, 576, 864 & 1152 (1152 appears not to be mentioned in the manual). If you take a map on the wrong IOC, it will be distorted, stretched or letterboxed.

The program will resolve transmissions using 60, 90, 120, 180 and 240 lines per minute.

Displayed results are VERY dependant on the monitor you are using. As can be expected, the better the resolution display, the better the displayed results, CGA mode is poor for display, small print is impossible to read, even on zoom, EGA/VGA give good displays. Print support is supplied for a number of printers, Epson compatible, OKI and of course for laser printers. As can be expected the print quality will depend on the graphics capability of the printer used. Laser is the best of course, but acceptable results can be obtained from normal 9 pin dot matrix type printers.

There is an automatic mode, which allows you to take and save specific maps. This works well for most maps, but make sure you have enough disc space available, if you want to take a lot of maps.

One point I have found is that it will not automatically take maps with an IOC of 576, if the IOC has been set up as 288, whilst the picture would be distorted, it still would have been useful. The reason I think is that the 576 start tone is 300Hz and the 288 tone is 675Hz, the program appears not to recognise 300Hz as a valid tone, rather an important omission I feel. It is possible to save the timetable information for later re-loading, it would have been better if the time table could have had the IOC entered as well as time date etc, or that the start tone, selects the correct IOC automatically if required.

The sample grey scale picture supplied and displayed on a VGA monitor is excellent, though I have not been able to take any pictures to compare with this due to lack of VLF receiving equipment.

The chart and the picture supplied and displayed on a CGA monitor is poor, NOT THE PROBLEM OF THE PROGRAM, but the resolution of the CGA system.

A certain amount of post processing is available, negative/positive switch, north/south and flip, colouring (dependent on display type) and zoom with save.

Picture save options include .PCX and .GIF formats.

Full file handling facilities are included, file delete, rename, sort, and frame loop images. Frame loop gives you a type of animation facility, but I have not had time to check this out.

CONCLUSIONS:

If you have a IBM compatible computer, with a EGA or better display, I think you will have many interesting hours with the program. I think I shall be dipping into the Piggy Bank and treating myself to a copy.

SCORECARD

Easy of installation	8	Documentation	9
Display CGA	4	EGA	6
VGA	8	HGA	not tested
Printing EPSON 6		Laser	8
Hobby quality	7	*Value for money	6*

* The lowish rating for this is due to the fact that the US dollar price is the UK pounds price.

I have talked to the importers about this, and they reply:-
"We provide free technical support, including advice on radios and aerials to all customers by phone or letter, and give customers special offers from time to time. Customers also get regular information and special rates on upgrades."

RIG hopes to make arrangements, with the co-operation of the UK importers, for copies to be available for members.

Bob Leggett

Members wanting to purchase, please make cheque out to:-

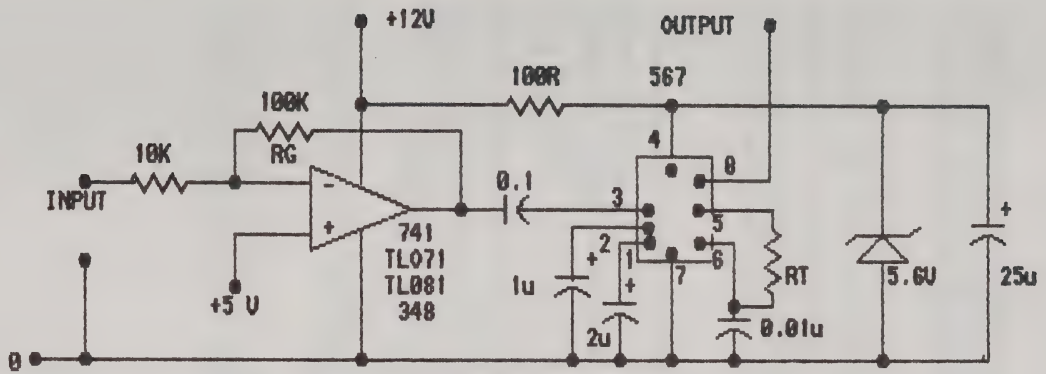
PC Maritime Ltd. for £122.45
and send it to
R.I.G, 14 Nevis Close, Leighton Buzzard. Beds. LU7 7XD
PLEASE MARK THE ENVELOPE 'PC FAX', THIS WILL SPEED THE ORDER.!!

2400 Hz Tone Detector by Colin Schulz

Extract from a letter from Colin:

I note that a few people have complained of scanning receivers locking to false signals. A very effective cure is a simple tone detector using a 567 PLL tone detector adjusted for 2400 Hz and used to detect the satellite subcarrier. This can then disable the scan instead of the normal carrier detection. It works well and saves many false triggers of the scanning. The circuif is on the next page.
If no freq. counter is available then adjust then adjust RT slowly and see the input go low when a tone of 2400Hz is applied to the input.
Strictly speaking the opamp may not be needed if the tone level from the receiver is high enough but it is safer to add it. If the opamp is omitted the coupling capacitor on pin 3, the input must be used.
The 5volt supply for the opamp NONINV input comes from the 5 volt supply for the PLL.
I use a 555 timer in the output to give a suitable delay to accomodate fading.

On another topic:
A small mod that seems to improve the LOK sync board is to gate the NOAA IR and VIS outputs so that only one output can be active at any one time. If both have an output at the same time then it must be noise. If one line is inverted and both fed through a Schmitt trigger it does improve the immunity to noise.



2400 SUB CARRIER DETECTOR.

This circuit can be built on a small piece of veroboard. RT is the freq adjust resistor and should be about 40K or so made up of a 33K resistor and a 10K trimpot.

RG is the sensitivity adjustment and should be a 100K trimpot. The opamp is not critical.

The output is a transistor collector that goes low to ground on decoding a tone.

Setup is simple if a counter is used to check pin 5 of the 567 PLL. Adjust RT for 2400Hz.

Output can be to a relay or any device and a time delay can be included if desired for ON/OFF or both. A LED is useful for checking and setup.

FRAMESTORE ADD-ONS by Peter Davies

I have been doing a little work on my YU3UMV Framestore as follows:-

First, contrast control to give smooth control of contrast of picture data being written in, I found that a 1K pot between Pin 9 on the A/D and earth gives the best result without the need for 10 Turn pots etc.

Second, I thought about a bargraph indicator to show what is going on the data lines to assist setting the contrast/brightness of the live satellite passes as they occur. After a little debate (an a lot of lager) in the local wine bar with my two friends, the following circuit was designed by Mark Nicholson of Marnic Communications and Tony Bonney.

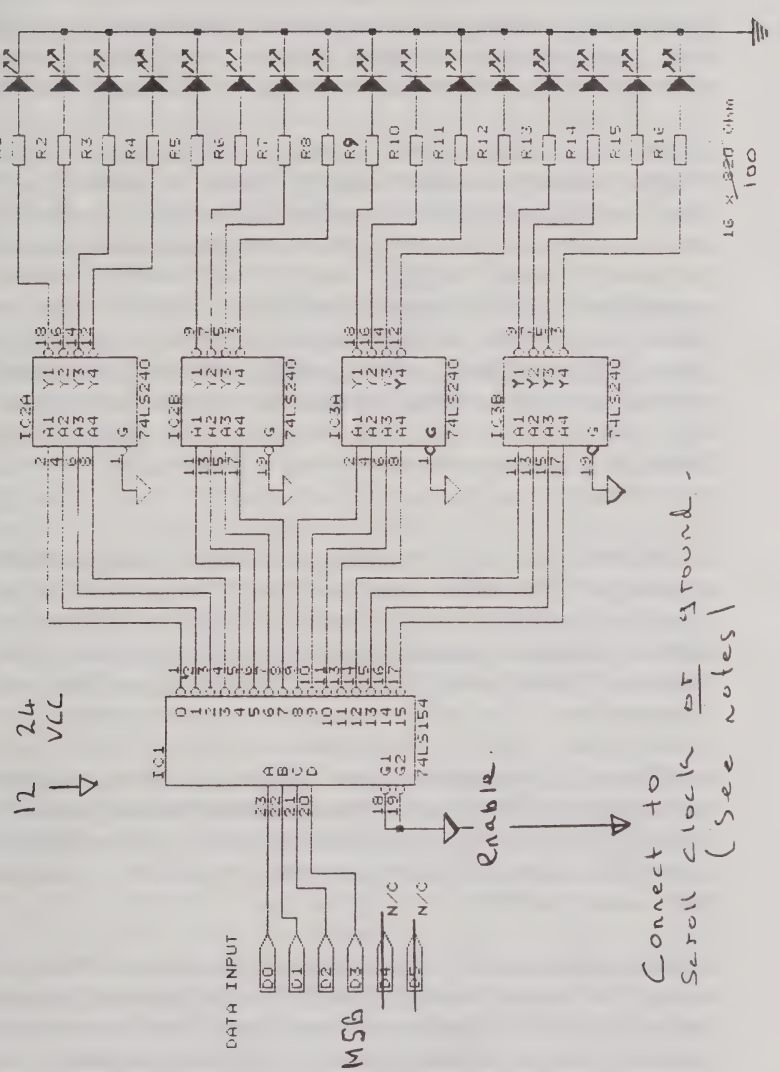
The four most significant bits of the A/D convertor are monitored by IC1. The code present at any instant switches on an LED via the buffers IC2/3. 4 BIT resolution give 16 values of grey scale which represents the framestores 64 values in steps of 4. The enable pins on IC11 are connected to the scroll clock in the store. This ensures that the display only indicates for data on the screen and not off screen for example when viewing a visible picture of a NOAA and not an infra red. The width of the flashing display represents contrast and whether it is shifted left or right represents brightness.

The display has greatly improved my pictures! The LEDs I use are two of these 10 LED blocks side by side.

Now, can someone tell me how to make a Balun for my Sat Antenna and has anyone got a cheap Meteosat downconvertor they don't want?

Merry Christmas to everyone.

Peter Davies.


D1-16
16 x RED
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
16 x 220 Ohm
100
10 VCC
IC2A
IC2B
IC3A
IC3B
74LS240
12 24
VCC
IC1
74LS154
Enable.
Connect to
Serial Clock or Ground.
(See notes)
DATA INPUT
D0
D1
D2
D3
D4
D5
N/C
N/C
MSB

MEMBERS LETTERS:

Dear Phil,

I noticed that the letters column of RIG 21 was rather sparse, so thought I'd jot down a few thoughts and observations - a bit of waffle really, but perhaps of interest. Mainly, what follows amounts to a summary of my summer's observations of the Okean-2 satellite.

Blessed with a long summer vacation, I directed most of my satellite imaging activity towards Okean 2. Since my interest in remote imaging only arose relatively recently, and after the demise of the previous 'Cosmos' satellite series, this was my first taste of high-resolution Russian imaging. And the early daytime visible images were superb. My first image capture in late April/early May was to me quite remarkable. With evening approaching, and the area presumably in twilight, an image of light, broken cloud over Finland took on an almost three dimensional appearance, attributable to cloud shadows on the ground bordering the clouds themselves. Similar effects are now apparent on the southbound Okean 2 passes (mid August).

I monitored Okean as regularly as I could, though several weeks were largely 'lost' when I was away on holiday, and discovered that there were generally 2 to 3 visible transmissions per week. Wednesdays and Thursdays were particularly unfruitful - I have noted very few visible transmissions on Thursday, and none at all on Wednesdays. The other five week-days appear to be equally productive. During the summer months, Okean was on a northbound passage, and most frequently transmitted when on a course taking it from the north of the Black Sea and over the Baltic. Transmissions invariably switched on suddenly, over, or slightly north of the Black Sea, and faded out over the northern horizon beyond North Cape (Norway).

I continually hoped that Okean would provide an image of the UK during that wonderful cloudless spell we all enjoyed, but rarely did we feature at all. Satellite passes close to the Greenwich Meridian provided the best UK images, and on May 25th with eqx. 359 deg.W. I obtained an image containing most of England and Wales. It looked very much as though Okean just was not interested in the Atlantic weather, confining its attentions to Scandinavia and the North Sea.

At last, one afternoon in late June, Okean actually transmitted twice on successive passes, and the second with eqx. 19 deg.W should have shown Britain clearly. It did, but what a disappointment; all the land was showing the 'peak white' syndrome mentioned in RIG 21.

July imaging was restricted to the 2nd week and the last few days (holidays), but during almost all this time, the visible images were spoiled by massive over exposure. Interestingly enough, this phenomenon can usually be observed for the first few seconds after switch-on, then it rights itself - presumably the exposure control system had gone awry. During this spell I noted one or two RADAR-only transmissions (piano-key ending strip), though there was no discernible detail on the images.

July 21st produced an evening RADAR pass showing the Lofoten Islands, flanked on each side by what appeared to be a cloud scan pattern (visible, IR?), one much brighter than the other, and July 29th produced a RADAR image of Svalbard. Definition was very poor in both RADAR images.

July 30th and 31st produced visible images, again very badly overexposed, and all but useless. However, the problem appeared to have been solved a week later, as the August 6th southbound pass (16.20z; 153 deg.W) gave a long visible signal with an image stretching from the Baltic down to Greece and the Aegean, where it faded out as the satellite dipped below the horizon. Detail was once again absolutely superb, and had continued so up till the time of writing (August 27th).

But now for a mystery. On August 14th, anticipating Okean (always chancy, since it probably transmits on only 30% of its passes near the UK), I switched on 137.4 MHz at 14.55z to hear distinctly a Meteor transmitting loud and clear. This yielded a superb visible image from Gibraltar, through Britain and northward. The image showed remarkably good land detail - Spain and France stood out well, and Britain also showed strikingly, outlined well by fragmented, patchy cloud. Indeed I picked up an identical image from Meteor 2-17 earlier in the day on 137.3 MHz. No Okean transmissions followed at all that afternoon. The Meteor on 137.4 had not previously been detected by me.

The following afternoon, August 15th, I awaited developments, and once more picked up the Meteor, but only a brief signal this time, providing unusually, a clear image of Asia Minor and the Eastern Mediterranean, with Crete standing out well, its mountains prominently cloud capped. The signal cut off suddenly over Istanbul, and I have not heard from it again. Could this be a trial of a newly launched satellite?

Last week-end Okean excelled itself, producing two good visible passes well over the Atlantic. Saturday's showed a brilliant image of the whole of Spain, and included a somewhat cloud bedecked Britain while the Sunday transmission was farther west, showing part of the large depression SE of Greenland. Perhaps this heralds a new phase in Okean's activities.

On a totally different track, it was disappointing to note that the membership appears to have declined during the past 12 months. One would have thought that, with clearly increased advertising by Timestep and Spacetech in national magazines, interest in remote imaging was flourishing. Has it ever been considered that RIG might advertise in some of the computing and electronics magazines? I know that I had difficulty initially in finding out about you, and it was only after an inquiry to Spacetech two years ago that I became aware of the Group's existence.

Thanks again for mentioning my satellite prediction software for the BBC Master and Archimedes microcomputers. I received quite a number of requests, including one from the Continent, and feedback suggests that members are pleased with its performance. Again, I am always pleased to issue a copy on receipt of a blank disc and return postage. The Archimedes package has been standardised into a single utility now, which both computes and prints out satellite AOS times, and edits and updates the file of Keplerian elements.

Les Hamilton

Still More improvements to the Ehrler LNA
by Greg Ehrler and John DuBois

(Reprinted from the US Journal JESAUG, issue 1990, issues 2 & 3

The original article describing this LNA appeared in JESAUG 89-1 and various improvements were published in the next issue. The modified article was reprinted in RIG ?? The amplifier delivers a minimum of 36db gain and can achieve 0.6 to 0.8db noise figure, performance which is necessary for HRPT or VAS reception.

The original design of this amplifier, in fact, was stimulated by a need to provide Amateurs with a practical way to achieve reception of digital images from GOES on a 10 or 12 foot diameter dish antenna. These sizes are readily available from TVRO suppliers and the 10 foot size is relatively transportable. (They have bigger trucks in the US!!) The LNA improvements in this article make the 10 foot size dish adequate when used with a good feed. Such a feed, with improvements, over the usual coffee can will be published soon.

The appearance of a "hot" new transistor at modest cost has made it possible to improve slightly on the performance of the original LNA design. This device is the NEC NE320 hetero junction field effect transistor, also called a HEMT (high electron mobility transistor), available from mid 1989 for around 30 dollars single quantity price. It is primarily designed for the spectrum above 4 GHz and will deliver a noise figure of 1.2db at 10 GHz. The lower frequency performance around 1.7 GHz is not bad however, the spec sheet shows about 0.3db in this region with over 22db associated gain! We know that inserted in a practical circuit the noise figure won't be quite this good but a 0.3db spec is just too good not to try.

The first few attempts at using the NE320 revealed just how hot it is - it oscillated wonderfully! Eventually we arrived at a way to get it calmed down on the same circuit board used for the earlier design. The principal change is a kind of diplexer as a load on Q1, made up of R6, L4 and the capacity of a board wiring pad. An entire revised schematic is shown in figure 1 and a new layout drawing in figure 2.

The good news is that the resulting amplifier is indeed a better performer - it measures about 0.45db noise figure at 1.7 GHz and 36db gain on a HP8970 noise figure meter.

The bad news is that to achieve this level of noise performance virtually requires "tweaking" of Q1 drain current and drain to source voltage by adjustment of R1 and R2 with some means of evaluating noise figure or the equivalent.

Assembly

This version of the LNA can be obtained by modification of one already built or it can be built from scratch. If it is to be built from scratch, the construction notes in the original article are essential. Assembly should proceed as in the first version with the subsequent modifications published in JESAUG 89-2 except for installation of C4, R6 and L5.

Figure 3 shows how C4, R6 and L5 are to be assembled on the wiring pad. This "stack" is delicate to build because the chip resistor is thin and fragile. Nevertheless with some preliminary practice it can be done and once soldered together there should be no further stress on it. Note that the unlabelled resonating capacitor across L4 shown in the schematic comes from the capacitance of the pc foil wiring pad to the ground foil underneath. A second choice for R6 is to use the same type resistor as R5 and R7. The carbon composition resistor can be used if the leads are cut very short, they should be folded over flush with the end of the resistor and cut at the outer edge.

A final step, not mentioned in the earlier articles, which adds insurance against instability from waveguide resonance in the Pomona box is to cut a piece of conductive foam of the type used in packaging transistors to fit tightly in the bottom of the box. Place it squarely in the box away from the circuit board before closing it up. It should be no thicker than 1/2 inch to avoid touching any part of the circuit.

Adjustment

If you have any way to observe noise performance, such as a noise figure meter or looking at the signal to noise ratio of a weak signal on a spectrum analyser, then the Q1 biasing can be optimised. Optimum noise figure will be near 10 milliamperes, or less, through Q1 and around 2 volts from source to drain. The source to drain voltage is varied by selection of R2 and the drain current is varied by selection of R1. These values can be set by DC measurement before proceeding to noise figure meter check.

First adjust R1 (a small pot is ok) for 10 mA through Q1. Then adjust R2 (again a small pot is ok) for about 2 volts source to drain. Pots (small) can be left in place for final adjustment on a noise figure meter. Minor adjustment of R1 and R2 values should produce a minimum in noise figure. Additional slight adjustment of L2 by squeezing or expanding may be possible. If the noise figure will not come down under about 1db, there may be a problem with Q2.

Assembled amplifiers

As a service to the Amateur community, assembled and tested amplifiers are available from Greg Ehrler. The original version is priced at $135 plus $5 for US shipping and the HEMT version is priced at $175 plus $5 for US shipping. Orders can be sent to Greg at 105-53 87th Street, Ozone Park, NY 11417.

Parts List

The prices given in the following parts list are approximate 1989 values and are given only for general guidance.

Q1 - GaAsFET transistor, NEC-32083A.
Q2 - GaAsFET Transistor , NEC-72084.
Q3 - MMIC, MAR-6, Mini-Circuits Labs.
Q4 - 78L05 voltage regulator IC, TO92 package.

Allen Bradley BB-1/8 Watt carbon comp. resistors, (*** Do Not substitute carbon film resistors***)

R1, R3	- 220 Ohms 5%
R2	- 10 Ohms 5%
R4	- 510 Ohms 5%
R5, R7	- 50 Ohms 5%
R6	- 50 Ohms "chip" resistor.

R6 - could also be the same as R5 & R7, see text.

C1, C2, C3, C5, - 100pf porcelain chip capacitor.
C6, C&, C9 - ATC100B-101M-CA500, American Technical Ceramics (ATC).
C4, C8 - 5.6pf porcelain chip capacitor, ATC 100B-5R6M-CA500.
C10, C11 - 1uF (minimum), 35 volt Tantalum capacitor.

C12 - 1000pf (minimum) feedthru capacitor.

L1 - 8 turns 28AWG enamel close wound on no55 drill (0.052 inch diameter) (remove the drill after winding).

Figures 1 & 2 may be found in the centrefolds.

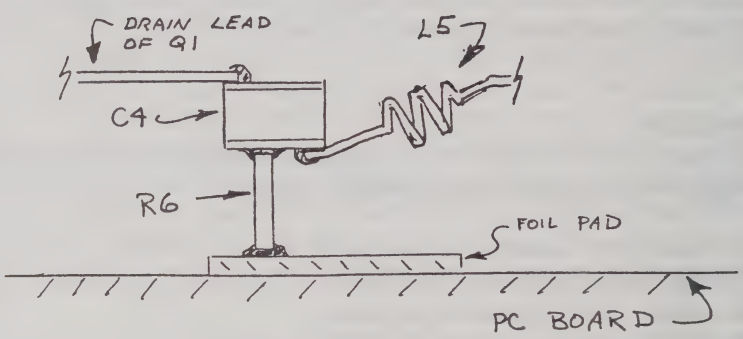


Fig. 3 — The stack. (See text.)

1.8 Metre Fibreglass Dish - Little Used
for sale or exchange
Contact ROBERT KEYES,
4 GLANMOR CRESCENT
NEWPORT, GWENT
TELEPHONE: 0633280958

RIG HELPLINES:

General Enquiries & PCB Supplies
Phil Seaford 0525 384419

NOAA info. Henry Neale 094 585 353

Russian, Chinese satellite info/status
Les Currington 0707 326058

Schools/ Educational enquiries,
Meteosat status and European Space Agency Colin Hall School 021 778 1311
Home 021 449 0006

Framestore technical support:
Mike Coombs 0530 243494
7.30pm - 9.30pm
Ian Gurton 0582 713770
7.30pm - 9.30pm
Dermot Dobson 93 Old Road,
Headington, Oxford. OX3 8SX.

RIG Dish & Feed Horn Stockists:
see back of previous newsletters

Supplier problems co-ordinator, PC-SAT III enquiries
Henry Neale 0945 85353

RIG at Rallies 1990
Mike Coombs see above for No.

RIG MICRO SPECIALISTS:

BBC Micro Position vacant, any volunteers ???

Commodore Amiga James Brown 0656 712632

Atari ST, Archimedes Peter Newman 0487 812121

IBM PC Phil Seaford see above
Please call at sensible hours ie 7.30pm - 9.30pm

RIG - Timestep PCSAT III

A small half sized PC card that will allow the display on IBM PC type computers of APT signals from Meteosat, GOES, NOAA and the Soviet polar Meteor and Okean satellites.

Card type	Half card 8 bit, plate through solder resisted
RFI	FCC part 15 and 1992 EMC compatible
Input	Two separate inputs, 100mV 10K ohm audio (adjustable)
Source	Live or from tape (no sync track needed)
Synchronisation	Derived from subcarrier on Meteosat, GOES and NOAA. From digital signal processing (DSP) on Meteor and Okean. No computer timing or calibrations used (or needed).
Resolution stored on disk	600 pixels 800 lines and 256 intensity levels
Zoom	To pixel resolution regardless of video card
Acquisition	Fully automatic on Meteosat and GOES (any PC). Fully automatic NOAA, Meteor and Okean live or tape (VGA, 286 and above only)
Printing	High resolution HP LaserJet (and clone) driver
Power	Supplied from host computer
Colour	64 greys or 256 colours from colour routine supplied
Contrast	Stretch or compression in linear or non linear
Display resolution	800 x 600 256 colours VGA
	640 x 480 256 or 16 colours VGA
	640 x 400 256 colours VGA (Paradise, Amstrad and Atari)
	320 x 200 256 colours VGA (display only, receive in 640x480x16 mode first)
	640 x 350 16 colours EGA (not NOAA or Soviet)
	320 x 200 4 colours CGA (not NOAA or Soviet)
	640 x 200 16 greys Amstrad 1512 (not NOAA or Soviet)
Cards supported	Any IBM register compatible card
	Tseng Labs chip set (Orchid, Sota etc)
	Paradise (Amstrad, Atari, Viglen etc)
	Video 7
	Trident (legal versions only) (Morse, ZyMOS)
Animation	Flicker free. Any section or zoom, 400 x 300 x 7 (VGA EGA)
Contents	Manual, PC card, software
Input connector	9 way D socket
Price	£137.50 (rally price) plus £3.50 postage and packing

Available from Henry Neale
Thornlea Fishersgate Sutton St James
Spalding Lincs Tel. 0945 85353

RIG SHOP CORNER

Meteosat Downconvertor:-

a) Assembled and tested module in tin plate box:-
£129.69 + £1.50 p&p.

b) Complete mounted in weather proof box:-
£157.96 + £3.00 p&p.

Waterproof power and channel change connector £10.00 extra if required, but note these functions can all be done via the coaxial downlead.

RIG VHF Scanning Receiver

a) Basic receiver module, with LED Channel number display, fully assembled and tested
£112.55 + £1.50 p&p

b) Same module as above but with liquid crystal frequency display module replacing the LED Channel display.
£151.57 + £1.50 p&p

Cheques for above units payable to 'DARTCOM' please

Items below available from the secretary:

The **RIG VHF preamp** also available includes a bandpass filter and is ideal for mast-head mounting. It is available from the secretary as a built and aligned PCB measuring 85mm by 33mm (3 5/16 x 1 15/16 inches). Module including first class post £13.37

28 page booklet entitled: Introduction to Weather Satellites & their Reception by Mike Mansfield. £2.50

Parts for **Low noise Amplifier** - see RIG 18
Orders now being taken for next batch. £40 approx
Enquiries re availability to Ian Gurton, Tel 0582 713770.

David Juett YU3 i/f s/w for IBM PC & clones £6.50

Cheques payable to "Remote Imaging Group" please

FRAMESTORE PCBS:

The 001 board of the YU3 framestore design is currently being extensively revised to include buffered 8 bit A-D outputs and ctrl signals, a new Sample & Hold chip, LED activity indicators on all 8 bits and the incorporation of external controls for the A-D chip. The boards are **still** not ready (at 1 DEC 90). Enquiries incl. sae to the secretary please, a reply will be sent when they are ready for sale.

PROLOGUE COMPUTERS LTD

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BS12 3DY. TEL. 0454 612882/325430

□ IBM COMPATIBLE COMPUTERS

XT –V20 12MHz. 640Kb RAM. 360 or 720Kb Floppy drive. 102 key enhanced keyboard.
5 Free Expansion slots, VGA mono monitor –640*480 pixels / 64 grey levels.
Serial and parallel ports. £559.00

AT –286 12MHz. 1Mb RAM (expandable to 4Mb). 1.2 or 1.44Mb Floppy drive.
Small footprint deluxe case, 200W PSU. 5 Free Expansion slots.
VGA Mono monitor –640*480 pixels / 64 grey levels. Paradise 512kb VGA card.
AMI BIOS £667.00

386 SX –16MHz. 1Mb RAM (expandable to 5Mb). 1.2 or 1.44Mb floppy drive.
Small footprint deluxe case, 200W PSU. 5 Free expansion slots.
VGA Mono monitor –640*480 pixels / 64 grey levels. Paradise 512kb VGA card.
AMI BIOS. £850.00 **

386 –25MHz. 1Mb RAM (expandable to 4Mb on m/b). 1.2 or 1.44Mb floppy drive.
Small footprint deluxe case, 200W PSU. 5 Free expansion slots.
VGA Mono monitor –640*480 pixels / 64 grey levels. Paradise 512kb VGA card.
£1156.00 **

□ OPTIONS:

VGA Colour monitor 14" (640*480). add £170
Super VGA colour monitor 14" (800*600). add £230
Mini tower case add £20
20Mb 65ms Seagate hard disk (inc. 16 bit controller) £214.
42Mb 28ms hard disk (inc. IDE controller). £239
Mouse (serial or bus interface). £30
MS DOS V3.3. £49

□ BAREBONE SYSTEMS:

XT 12MHz, 150W PSU, Case £153.00
AT–286 12MHz, 200W PSU, Deluxe Case £239.00
386SX 16MHz, 200W PSU, Deluxe Case £414.00 **
386 25MHz, 200W PSU, Deluxe Case £680.00 **

□ COMPONENTS:

MOTHERBOARDS : XT – £68, AT 286 – £136, 386SX – £320 **, 386–25 – £569 **
VGA CARDS : Paradise 256kb (640*400*256 colours, upgradable to 512kb) £98.00
Paradise 512kb (640*480*256 colours etc.) £114.00
Tseng Labs 1Mb (1024*768*256 colours – multiscan only) £219.00 **
MONITORS : 12" VGA mono £107, 14" VGA colour £270
14" Super VGA colour £340, 14" multiscan colour £380
FLOPPY DRIVES : TEAC 360/720kb – £64, 1.2/1.44mb – £69
HARD DISKS : SEAGATE ST225 20mb – £165, ST251–1 40mb 28ms – £225

Normal delivery – 5 Working Days. ** Items within 28 Days

spacetech

Space Science Resources

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DORSET DT5 2EA UK
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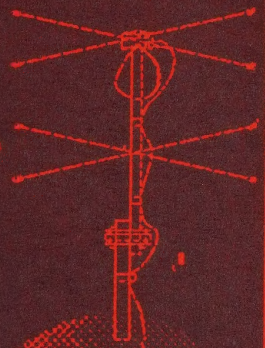

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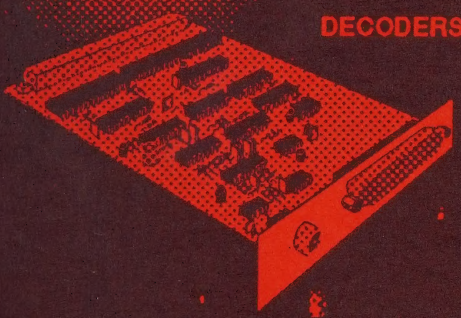

ANTENNAS

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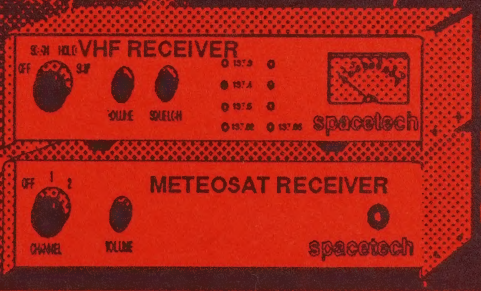

BOOKS
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ETC. . . .

1024 Pixels 768 Lines 256 Colours

As usual Timestep are one step ahead of their competitors. Actually they are so far behind now, we think they have given up ! It takes an awful lot of investment to be the Number One. Because we are truly on the Leading Edge and we always store FULL satellite resolution, we can now support the display of 1024 Pixels 768 Lines and any 256 colours out of 1/4 million, all on the screen at the same time.

The software update is free to our customers ! For existing PC users we can supply 1024 x 768 x 256 1Mb video cards for just £199.00 inc. We have Hitachi CRT monitors for 1024 x 768 x 256 for £299.00 inc. We have a few demonstration Hitachi CRT 1024 x 768 x 256 monitors for only £199.00 inc, these would make a brilliant Christmas present ?

PCSAT III

The definitive package that will receive and STORE IN FULL SATELLITE RESOLUTION, all satellites including, NOAA, Meteor, Okean, Feng Yun, Meteosat, GOES, and GMS. They are all different, and we use software not hardware to decode them for an easy simple upgrade path, even if new satellites are launched. Don't be stuck with old designs, ask if OKEAN will work from a mono tape AND if it is stored in FULL resolution. Ours does of course. More important is the fact that FULL resolution is ALWAYS stored, if you want to look at any of the 256 levels transmitted, you can. Other systems simply throw this data away. "Everybody is telling us it's the best thing that has happened" quote from Henry Neale RIG Chairman, RIG 22. "Brilliant results from Okean" Les Currington RIG Soviet expert. "Does everything properly" Lawrence Harris Shortwave Magazine columnist. "The best colour manipulation and the most versatile graphic support" John DuBois Dallas Remote Imaging Group committee member and the HRPT Guru. In stock now for Christmas from Henry Neale RIG.

NOAA, Meteor, Okean, Feng Yun

Our PC software supports all these modes, live or from tape in full resolution. Our ProScan receiver supports all frequencies. Our customers did not have to re-program their synthesizers or buy new crystals when Feng Yun came up. In stock now !

VGA FAX

A brilliant HF Fax program that works in all modes including VGA in 16 shades of grey. No complicated computer timing or wandering images ! Receiving FAX, RTTY and NAVTEXT, this unit has a high performance, level insensitive, interface. £99.00 inc VAT and postage.

Polar Quadrifilar Helix Antenna

No nulls, horizon to horizon coverage and as used by the NOAA satellites. Radiation from the quadrifilar helix antenna is circularly polarised and of the same screw sense everywhere thought the radiation sphere. It matches 50 or 75 ohm co-ax perfectly and impedance mismatch will not skew the radiation pattern as is the case with crossed dipoles. This is the antenna that the professionals use. Available February or sooner.

HRPT High Resolution NOAA data

Some of you may have seen John DuBois article in JESUG about his incredible system. If you haven't read this article ask us for a copy. Basically Timestep have currently the only licence to produce this system outside of the USA. It is amazingly simple and the resolution of 1.1Km coupled with digital noise free transmissions is simply startling ! You will need a steerable dish or multiple yagi system and a low noise pre-amp. If you are getting noise free images from Meteosat then your antenna and pre-amp is probably OK as it is. We will then supply a special (a) a 6 channel HRPT receiver that simply plugs into your antenna/pre-amp system and (b) a PC card and (c) software. All these three items should cost less than £1,000 in total and they will be available separately at low cost for experimenters. It is not impossible to convert an existing Meteosat convertor to HRPT, but it needs a lot of work. You will notice that our HRPT receiver has 5 channels fitted, this is correct. Feng Yun has HRPT, and you will want to be able to receive everything available. In stock February or sooner.

Timestep Weather Systems
Wickhambrook Newmarket CB8 8QA England
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